CLIMATE AND HEALTH ALLIANCE

Submission to the Senate Community Affairs Committee Inquiry into the Social and Economic Impact of Rural Wind Farms

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Summary

The Climate and Health Alliance recognises an urgent transition from fossil fuels to clean renewable energy is needed to achieve a zero emissions stationary energy supply to reduce climate risk and thereby reduce risks to human health and wellbeing from climate change.

Examination of the potential for adverse health effects from emerging energy generation technologies should also take into consideration the adverse health effects from existing energy generation systems.

Our current energy supply system in Australia poses significant risks to public health due to increased particulate matter (PM) in ambient air, exposure to which has long-term effects on mortality as well as contributing to the development of cardiac and respiratory disease, including chronic obstructive pulmonary disease, pneumonia and ischaemic heart disease.

Climate and Health Alliance is not aware however of any published peer reviewed scientific studies that demonstrate adverse health effects associated with wind farms, and draws the committee's attention to the paper published by the National Health and Medical Research Council in 2009.

There is some evidence internationally that annoyance levels increase faster for wind turbines than for comparable industrial noise, and also when people hold negative attitudes towards turbines.

A 2006 report commissioned by the Department of Trade and Industry in the UK concluded that infrasound associated with modern wind turbines would not lead to noise levels that will be "injurious to the health of a wind farm neighbour".

A recent study commissioned by Australian wind farm developer Pacific Hydro revealed infrasound levels from wind farms were well below the level of infrasound produced by many other natural and man-made sources.

The Victorian Department of Health has indicated it had examined both the peer-reviewed and validated scientific research and concluded that *"the weight of evidence indicated that there are no direct health effects from noise (audible and inaudible) at the levels generated by modern wind turbines."*

The Senate Committee should be aware of the links between the anti wind group Landscape Guardians and the climate change sceptic group, the Australian Environment Foundation.

Introduction

The Climate and Health Alliance (CAHA) is a national alliance of organisations and people in the health sector who wish to see the threat to human health from climate change and ecological degradation addressed through prompt and effective policy action.

The establishment of CAHA in August 2010 was prompted by rising concern in the health sector of the implications of unmitigated climate change and environmental pressures on human health.

The membership of the Climate and Health Alliance covers a broad cross section of the sector including health care professionals from a range of disciplines, health care service providers, institutions, academics, researchers, and consumers.

For more information about the membership and governance of the Climate and Health Alliance, please see Appendix A.

Evidence regarding health effects of wind farms

The Climate and Health Alliance is aware that part of the impetus for this Inquiry has come from claims made by those who oppose the development of wind farms who contend that there is adverse health effects associated with living and working near wind farms.

The Climate and Health Alliance is not aware however of any published peer reviewed scientific studies that demonstrate adverse health effects associated with wind farms, and draws the committee's attention to the paper published by the National Health and Medical Research Council in 2009, which states:

"While a range of effects such as annoyance, anxiety, hearing loss, and interference with sleep, speech and learning have been reported anecdotally, there is no published scientific evidence to support adverse effects of wind turbines on health.

"Reported health concerns primarily relate to infrasound (sound that is generally inaudible to the human ear) generated by wind turbines. The World Health Organization states that:

> *'There is no reliable evidence that sounds below the hearing threshold produce physiological or psychological effects'. A recent expert panel review in North America found no evidence that audible or sub audible sounds emitted by wind turbines have any direct adverse physiological effect. The principal human response to perceived infrasound is annoyance."*

There is some evidence internationally however that annoyance levels increase faster for wind turbines than for comparable industrial noise, and also when people hold negative attitudes towards turbines.[1]

The NHMRC paper also cites a 2006 report commissioned by the Department of Trade and Industry in the UK, undertaken by an expert on noise, acoustics and vibration, which

concluded that infrasound associated with modern wind turbines would not lead to noise levels that will be "injurious to the health of a wind farm neighbour".[2]

A recent study commissioned by Australian wind farm developer Pacific Hydro compared infrasound levels from wind farms and some common sources of infrasound. This revealed infrasound levels from wind farms (measured at 63-67dB (G)) were well below the level of infrasound produced by many other natural and man-made sources, including the infrasound recorded at a beach (75 dB (G)), less than that from a gas fired power station (74dB (G)), and less than the infrasound recorded in the Adelaide CBD (76dB (G)). All these measurements fall below recognised human perception thresholds of infrasound which is 85 dB (G). As the NHMRC paper concludes, noise levels from wind turbines appear to be "negligible", in that they are comparable, and in some cases less than, sounds found in other common environments.

A technical report produced in 2010 for the Australian Clean Energy Council by acoustic consulting firm Sonus suggests Australia's standards and guidelines used to assess the noise from wind farms are amongst the most stringent and contemporary in the world.[3] It also states that detailed and extensive research and evidence indicates that *"the noise from wind farms developed and operated in accordance with the current Standards and Guidelines will not have any direct adverse health effects"*. This report cites a finding from the Victorian Department of Health which indicates it had examined both the peer-reviewed and validated scientific research and concluded that *"the weight of evidence indicated that there are no direct health effects from noise (audible and inaudible) at the levels generated by modern wind turbines."* [4]

A scientific advisory panel comprising medical doctors, audiologists and acoustic professionals from the United States, Canada, Denmark and the United Kingdom established by the American and Canadian Wind Energy Associations concluded that:

> *"there is no reason to believe, based on the levels and frequencies of the sounds and the panel's experiences with sound exposures in occupational settings, that the sound from wind turbines could plausibly have direct adverse health consequences".*[5]

The report from the advisory panel referred to above suggested there are a number of psychological and physiological responses to stress documented in medical literature which be implicated in the development of perceived health effects in response to wind turbines.

These are the nocebo effect, sensory integration dysfunction and somatoform disorders.[6]

The 'nocebo' effect is defined as "an adverse outcome, a worsening of mental or physical health, based on fear or belief in adverse effects" - essentially the opposite of the well known 'placebo' effect, where belief in positive effects of an intervention may produce positive results.[7]

With respect to these effects, the panel concluded:

"..the large volume of media coverage devoted to alleged adverse health effects of wind turbines understandably creates an anticipatory fear in some that they will experience adverse effects from wind turbines. ….The resulting stress, fear, and hyper vigilance may exacerbate or even create problems which would not otherwise exist. In this way, anti-wind farm activists may be creating with their publicity some of the problems they describe.

"... Associated stress from annoyance, exacerbated by the rhetoric, fears, and negative publicity generated by the wind turbine controversy, may contribute to the reported symptoms described by some people living near rural wind turbines."[8]

Health effects of current energy resources

The Climate and Health Alliance recognises an urgent transition from fossil fuels to clean renewable energy is needed to achieve a zero-emissions stationary energy supply to reduce climate risk and thereby reduce risks to human health and wellbeing from climate change.

Examination of the potential for adverse health effects from emerging energy generation technologies should also take into consideration the adverse health effects from existing energy generation systems.

Australia's current energy systems are heavily reliant on the burning of fossils fuels such as coal and gas for electricity generation. These energy sources are not only implicated in driving climate change but, particularly in the case of coal, also pose significant risks to human health. Effectively addressing climate change requires that a shift away from fossil fuels to clean renewable energy to reduce greenhouse gas emissions which will also reduce many current health risks associated with the mining, transportation and burning of coal, such as developmental disorders, cancers, heart disease and respiratory problems.[9]

The current energy supply system in Australia poses significant risks to public health. The generation of electricity powered by fossil fuels is associated with increased particulate matter (PM) in ambient air, exposure to which has long-term effects on mortality as well as contributing to the development of cardiac and respiratory disease, including chronic obstructive pulmonary disease, pneumonia and ischaemic heart disease.[10] Air pollution from increased particulate matter is estimated to be responsible for millions of premature deaths and avoidable illnesses worldwide.[11]

As public health researchers Martine Dennekamp and Marion Carey wrote recently in the *NSW Public Health Bulletin*:

"Fossil fuel combustion, primarily from motor vehicles and energy generation, is a major contributor to anthropogenic climate change and air pollution-related health conditions. Action to reduce greenhouse gas emissions by improving energy efficiency, departing from carbon-intensive energy generation, facilitating mass transit and active transport options, also has the potential for significant public health benefits." [12]

A 2009 report by the Physicians for Social Responsibility in the US outlines the very serious human health threats from the use of coal for electricity generation - from every stage of the process. These effects are summarised in the following extract from *Coal's Assault on Human Health* below:

"Coal pollutants affect all major body organ systems and contribute to four of the five leading causes of mortality in the U.S.: heart disease, cancer, stroke, and chronic lower respiratory diseases. This conclusion emerges from our reassessment of the widely recognized health threats from coal. Each step of the coal lifecycle—mining, transportation, washing, combustion, and disposing of postcombustion wastes—impacts human health. Coal combustion in particular contributes to diseases affecting large portions of the U.S. population, including asthma, lung cancer, heart disease, and stroke, compounding the major public health challenges of our time. It interferes with lung development, increases the risk of heart attacks, and compromises intellectual capacity."

Air pollution from fossil fuels is an established contributor to cardiovascular and respiratory disease,[13] and there are several regions in Australia whose dependence on the fossil fuel industry leaves local communities particularly vulnerable to associated adverse health impacts. For example, the Latrobe Valley in Victoria and Newcastle region of NSW both have substantial coal mining and coal transportation industries. Respiratory morbidity has been reported in association with outdoor air pollution in a number of Australian regions including the La Trobe Valley, the Newcastle and Wollongong areas of New South Wales (NSW) and the Melbourne region.[14]

Fossil fuel combustion is not only associated with the production of particulate matter and carbon dioxide – it also produces nitrous oxide (associated with respiratory disease) and sulphur dioxide (associated with adverse cardiovascular health effects).[15,16] Reduction in exposure to these pollutants (such as a ban on coal or fuel oil sulphur) has been positively associated with a decline in deaths.[17]

The annual health costs of coal-fired power generation in Australia are estimated at $2.6 billion.[18] Coupled with costs from traffic pollution (a 2003 estimate of which put annual health costs at $3.3 billion), the health costs to the Australian community from burning fossil fuels is around $6 billion annually.[19]

If the currently externalised total climate and health costs for Australian power stations were accounted for, the costs of energy generated by fossil fuels would be considerably higher. If total climate and health costs were included, additional costs are estimated at: $A19/MWh for natural gas, $A42/MWh for black coal and $A52/MWh for brown coal.[20] In contrast, the costs for wind power installations would increase around $A1.50/MWh, and solar thermal and solar PV around $A5/MWh.[21]

The scientific process

The Climate and Health Alliance (CAHA) places great importance on scientific evidence as developed by the process of peer review. CAHA engages with an expert advisory committee to seek advice on its public statements, including this submission.

The Climate and Health Alliance contends that an important consideration for this Committee is a clear understanding of the scientific process: what it is, and what it is not.

A recent public statement by the Australian Chief Scientist, Professor Penny Sackett, provides a useful description of the scientific process and the importance of peer review in the production of robust scientific evidence and progress in scientific understanding.

Professor Penny Sackett said:

"Part of the scientific process is submitting one's work to an independent expert in the field, called the referee, who is expected to read the manuscript critically, with an eye to spotting any possible errors in analysis or logic, any important omissions, any lack of appropriate levels of reference, any lack of clarity, any misinterpretation of the statements or work of others."

"It is very common for a manuscript to be revised on the advice of the referee. Once published, other scientists are free to criticise, build upon or amend the work, but modern science requires that this be done in the same manner, through work that is also submitted to expert peer review mediated by the editor of a journal.

"While the process does not guarantee that everything that is published is correct, it does ensure that those who engage in science have all agreed to adhere to the same standards."

The Chief Scientist of New Zealand also recently issued a statement about the scientific process. Professor Peter Gluckman said:

"Science is a process based on questions leading to partial answers, in turn leading to more questions and more partial answers, and so forth. In complex systems, this rarely leads to absolute certainty, but much more often to a balance of probabilities. Science-based decisions that society has to make will always rely on weighing up the risks of acting versus those of not acting. This has long been apparent in areas of public health, such as when dealing with events such as influenza epidemics."

"…Peer review itself is not perfect, but replication, evaluation and open access to data are all components of how science advances and self-corrects. That is what distinguishes the scientific method from simple assertation."

Misinformation about wind and science

The Climate and Health Alliance holds concerns about the veracity of claims being made by some groups in relation to the health effects of wind farms.

The Climate and Health Alliance is aware that the medical director of the Waubra Foundation claims that there is a link between infrasound (produced by wind turbines) and the onset of an acute hypertensive crisis.[22,23] However the Climate and Health Alliance is not aware of any credible scientific research that demonstrates this link, and again refers the Committee to the findings reported in the NHMRC paper et al cited above.

The Senate Committee should be aware of the links between the anti wind group Landscape Guardians and the climate change sceptic group, the Australian Environment Foundation.

While the links between the Australian Environment Foundation and the Waubra Foundation are not clear, the Australian Environment Foundation publishes correspondence and material from the Waubra Foundation on its website, along with an extensive range of criticisms of environmental policy initiatives and the promotion of scepticism with regard to the science of climate change.

The Australian Environment Foundation is itself associated with the Institute for Public Affairs, recently named by science historian Naomi Oreske as an Australian "Merchant of Doubt' with respect to misinformation about the science of global warming.[24]

This title refers to the 2010 book co-authored by Oreske which outlines the extensive evidence regarding the efforts of some scientists to mislead the public and deny well established scientific knowledge, firstly about tobacco and more recently about global warming. This exhaustively researched book reveals the strategy of demanding scientific proof by some think tanks and scientists in order to create doubt in the minds of the public about scientific evidence has been a deliberate one in order to delay action on climate change. The Climate and Health Alliance contends we must be very careful that such tactics are not employed to halt the transition to a clean energy supply system here in Australia – a transition that is necessary and urgent, in order to reduce climate risk and protect human health and wellbeing from further adverse effects from climate change.

Conclusion

The Climate and Health Alliance finds that no convincing health-related evidence exists at this time that would support a moratorium on deploying wind turbines. On the contrary, there is reason to believe that wind energy poses a lower public health risk than alternative means of power generation. The Alliance strongly supports any on-going research efforts that continually monitor, quantify, and compare the risks to physical and mental health associated with all means of power generation.

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APPENDIX A

About the Climate and Health Alliance

The Climate and Health Alliance is a growing coalition of health care stakeholders and represents a broad cross section of the sector, including health care professionals from several disciplines, health care service providers, institutions, academics, researchers, and health care consumers. It has an executive committee to guide its work, and an expert advisory committee with senior health and climate researchers to ensure the positions of the Alliance reflect an evidence-based approach.

Executive Committee

Erica Bell is a deputy director of the Department of Rural Health, University of Tasmania and represents the Australian Rural Health Education Network.
Susie Burke is a senior psychologist in the Public Interest, Environment and Disaster Response team of the Australian Psychological Society.
Sally Fawkes is a senior research fellow in the School of Public Health at La Trobe University and represents Health Promoting Hospitals.
Bret Hart is a public health physician and founder of the Alliance for Future Health.
Michael Moore is the chief executive officer of the Public Health Association of Australia.
Elizabeth Reale is the federal professional research officer and librarian at the Australian Nursing Federation.
Christine Materia is a policy and projects officer who represents the Australian Hospitals and Healthcare Association.
Jenny Longland is the operations manager of CRANA*plus*, a professional association for rural and remote health professionals.
Patrick Tobin is director of policy at Catholic Health Australia.

Expert Advisory Committee

The following people provide advice about climate change and health research to assist CAHA take a robust evidence-based approach in its public statements and activities:
Professor Tony Capon, A/Professor Grant Blashki, Dr Erica Bell, A/Professor Jane Carthey, Dr Peter Tait, Professor David Karoly and Professor Stephan Lewandowsky.

Members

Australian Association of Social Workers (AASW)
Australian College of Rural and Remote Medicine (ACRRM)
Australian Council of Social Service (ACOSS)
Australian Hospitals and Healthcare Association (AHHA)
Australian Health Promotion Association (AHPA)
Australian Institute of Health Innovation (AIHI)
Australian Psychological Society (APS)
Australian Women's Health Network (AWHN)
Australian Nursing Federation (ANF)
Australian Rural Health Education Network (ARHEN)
CRANA*plus*
Doctors for the Environment Australia (DEA)
Doctors Reform Society (DRS)

Food Alliance (within Food Policy Unit of the WHO Collaborating Centre for Obesity Prevention at Deakin University)
Health Consumers' Network (Qld)
Public Health Association of Australia (PHAA)
Royal Australasian College of Physicians (RACP)
North Yarra Community Health (NYCH)
Services for Australian Rural and Remote Allied Health (SARRAH)
Women's Health in the North
World Vision

Convenor

Fiona Armstrong is the founder and convenor of the Climate and Health Alliance. Fiona is a public policy analyst with qualifications in health and politics and a strong interest in climate policy and environmental issues. She is also a journalist and editor and has been published on many topics including health, environment, politics, energy and climate change. She is a former Chair of the national advocacy group, the Australian Health Care Reform Alliance, and a Fellow of the progressive public policy think tank, the Centre for Policy Development.

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